

# Krasnogorsk Water-Efficiency Program

**Location:** Krasnogorsk, in the Moscow Region

**Type:** Water utility reform and water efficiency

**Size:** 13 pumping plants

**Funding:** Total: US\$158,000

(All from the joint stock water utility)

**Objective:** To reduce water utility energy consumption.

**Duration:** 1997–2000

**Scale:** Urban

## Summary

The municipal water utility in Krasnogorsk, a municipal utility turned joint-stock company, implemented several innovative water efficiency measures – all completely funded by the “vodokanal” itself. Automating remote control systems and introducing variable speed drives (VSDs) reduced electricity consumption per unit of pumped water by an average of 17%. Despite a 20% increase in pumped water in 2000 compared with 1997, electricity use remained the same, and actual costs of municipal water supply dropped by 3.4%.

## In-Country Principles That Attracted Nondonor Financing

- Capacity building and informed decision making

A basic principle for enabling effective, sustainable, and integrated water management was the effective coordination among sectors, between public and private actors, and across multiple geographic and institutional scales.

An important guideline that helped create an enabling environment and mobilize financial resources was the consid-



eration of water as an economic, social, and environmental good, including acknowledgement of the full costs of water management and water services, and transparent, equitable, and sufficient allocation of those costs throughout society.

## Financing

The Krasnogorsk Vodokanal was, as were all water utilities in Russia, a municipal enterprise. Subsequently it became a rented company, and ultimately, a joint-stock company. With this change of status, a new generation of leaders emerged, who focused on finding ways to analyze and reduce production costs.

All funding (US\$158,000) for the improvements came from the joint-stock utility.

## The Project

Water supply and distribution in the vodokanal includes 13 pumping plants supplying water from water wells to the municipal network. Water pumping stations differ in capacity and vertical rise (head), so each station had a different impact on the network. In the past, there was little if any monitoring information or data for individual stations, making optimal functioning of the entire system difficult to ensure.

Reliability decreased from year to year, and maintenance costs grew. In 1996, vodokanal management decided to replace this remote control system with a more up-to-date one. The new system allows for permanent control over all pumping plants by monitoring water pressure, water consumption, and water store in the city. At any minute, the dispatcher has complete control over all pumping plants and can change their operating parameters by switching on/off relevant equipment.

## Technical Data

The obsolete remote control system was replaced with a modern one that uses computerized tools, controllers, and software that allow for retrospective information control. Information for up to 400 days in the form of curves, charts, etc., allows for equipment operation analysis and projections for various scenarios.

On the basis of water level in storage tanks, the updated system regulates the work of pumps. Frequency converters or VSDs have been incorporated in the rotary pumps control layout. By changing parameters of frequency converters, daytime

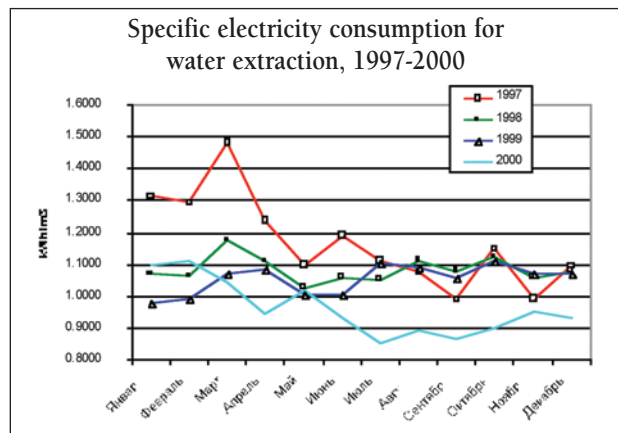
and nighttime pressure in the network is ensured — so the system can adjust for changes in demand, thus saving energy when demand is lower.

## Performance Data

The remote control automation system, by stabilizing water pressure and removing water hammers, has reduced the number of emergencies in water pipe operations. Water pipe breaks were 33% lower in 1999 to 2000 as compared with 1998 because of the installation of frequency converters. The system also reduces electricity consumption by lowering nighttime pressure from 5.5 to 3.6 atm. Installation of frequency converters also reduced electricity consumption by 30%.

## Participants and Roles

The project improvements were conceived of and financed by the joint-stock utility. Outside contractors provided technical guidance, equipment, and software.



## Partner Contacts

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